

WHAT IS CLAIMED IS:

1. A method of communicating among a plurality of nodes in a wireless network, comprising:

assigning a timeslot to each of the plurality of nodes in the wireless network, the timeslot being a time for a corresponding one of the plurality of nodes to receive messages transmitted by other of the plurality of nodes;

assigning a modulation scheme to the each of the plurality of nodes; transmitting a message from at least one of the other of the plurality of nodes, using the assigned modulation scheme, to at least one destination node within the plurality of nodes, the message being transmitted during a timeslot assigned to the at least one destination node; and

receiving, at the at least one destination node, a message from the at least one of the other of the plurality of nodes.

2. The method of claim 1, wherein the assigning comprises assigning one of a plurality of transmit spreading codes to each of the plurality of nodes.

3. The method of claim 1, wherein the assigning comprises assigning one of a plurality of hop sets to each of the plurality of nodes.

4. The method of claim 1, wherein:  
the assigning comprises assigning a unique transmit spreading code to each of the plurality of nodes.

5. The method of claim 1, wherein:

the transmitting a message comprises transmitting messages from a plurality of transmitting nodes, and

the receiving a message comprises receiving, at one of the at least one destination node, the respective messages from the plurality of transmitting nodes.

6. The method of claim 1, wherein the receiving a message comprises receiving, at a plurality of the at least one destination node, messages from a plurality of transmitting nodes.

7. The method of claim 1, wherein the assigning comprises assigning one of a plurality of orthogonal or nearly orthogonal transmit spreading codes to each of the plurality of nodes.

8. The method of claim 7, wherein the assigning further comprises assigning one of K orthogonal or nearly orthogonal transmit spreading codes to each node, where K is a number less than a number of nodes in the wireless network.

9. The method of claim 7, further comprising:  
waiting, after the transmitting, for an acknowledgement indicating correct receipt;  
and  
when the acknowledgement is not received after a predetermined period of time:

selecting a new transmit spreading code; and  
retransmitting the message.

10. The method of claim 1, wherein:

the assigning comprises assigning a plurality of one of orthogonal or nearly orthogonal transmit spreading codes, carrier frequencies, and hop sets to each node of the plurality of nodes, each of the nodes having a plurality of transmitters and a plurality of receivers,

the transmitting comprises transmitting a plurality of messages from one of the nodes to the at least one other of the nodes, and

the receiving comprises receiving, from the one of the nodes, the plurality of messages.

11. A network comprising:

a plurality of nodes, each of the nodes having an assigned modulation scheme, each of the nodes comprising:

at least one transmitter configured to transmit to a destination node using the assigned modulation scheme during a timeslot assigned to the destination node; and

a plurality of receivers configured to receive a plurality of messages during a timeslot assigned to the node.

12. The network of claim 11, wherein each of the nodes further comprises:  
a plurality of transmitters, each of the transmitters being configured to transmit  
using one of a plurality of transmit spreading codes, a plurality of carrier frequencies, and  
a plurality of hop sets.

13. The network of claim 11, wherein each one of the receivers is configured to  
demodulate each of the received messages using one of a transmit spreading code of the  
plurality of transmit spreading codes, a carrier frequency of the plurality of carrier  
frequencies, and a hop set of the plurality of hop sets.

14. A network comprising:  
means for transmitting in a network that includes a plurality of nodes messages  
using a plurality of modulation schemes; and  
means for receiving a plurality of the messages only during assigned timeslots.

15. A machine-readable medium having recorded thereon instructions for at least  
one processor of a node, such that when the at least one processor reads and executes the  
instructions, the node is configured to:

receive, a message from at least one of the nodes during a receive timeslot  
assigned to the node.

16. A method comprising:

receiving, by a node in a network during a TDMA timeslot assigned to the node for receiving, a plurality of messages transmitted by a plurality of other nodes, each of the other nodes transmitting messages to the node during the timeslot assigned to the node, each of the messages being transmitted using a different orthogonal or nearly orthogonal transmit spreading code.

17. A method for simultaneously receiving a plurality of messages in a wireless network node, the method comprising:

receiving, by a node in a network during a TDMA timeslot assigned to the node for receiving, a plurality of messages transmitted by a plurality of other nodes, each of the other nodes transmitting message during the timeslot assigned to the node, each of the messages being transmitted using a different carrier frequency.

18. A method for communicating among a plurality of ultra-wideband radios functioning as wireless network nodes, the method comprising:

using one of a plurality of transmit spreading codes to transmit a message from a ultra-wideband radio to at least one other of the ultra-wideband radios in a wireless network during a timeslot assigned to the at least one other of the ultra-wideband nodes for receiving the message;

receiving and demodulating the message, using the one of the plurality of the transmit spreading codes at the at least one other of the ultra-wideband radios during the timeslot.

19. A node comprising:
  - at least one transmitter configured to transmit to a destination node using an assigned modulation scheme during a timeslot assigned to the destination node; and
  - a plurality of receivers configured to receive a plurality of messages during a timeslot assigned to the node.
20. The method of claim 1, wherein the timeslot is the same for the each of the plurality of nodes.
21. The method of claim 1, wherein the timeslot is different for the each of the plurality of nodes.
22. The method of claim 1 wherein the timeslot is the same for certain of the plurality of nodes and is different for each of the plurality of nodes other than the certain nodes.
24. In an ad hoc, wireless network having a plurality of nodes, a method of communicating amongst said nodes comprising:
  - assigning a timeslot to each of said plurality of nodes, said timeslot being the time when said each of said plurality of nodes is capable of receiving a message from at least one other of said plurality of nodes;
  - assigning a modulation scheme to said each of said plurality of nodes;

transmitting said message from said at least one other of said plurality of nodes in accordance with said modulation scheme to at least one of said each of said plurality of nodes during said timeslot assigned to said at least one of said each of said plurality of nodes; and

receiving said message at said at least one of said each of said plurality of nodes.